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Robert E. Willis
Operations Division, Portland District
U.S. Army Corps of Engineers
CENWP-EM-E Attn: Robert Willis
P.O. Box 2946
Portland, OR 97208-2946 Also Via E-Mail: Robert.E.Willis@usace.army.mil

Re: Final Supplemental Environmental Impact Statement (FSEIS) for the Proposed Channel Deepening Project

Dear Mr. Willis:

The fundamental problem with the FSEIS, and the underlying EISs and EAs associated with O&M dredging of the river channel and the Mouth of the Columbia River (MCR), is the Corps' belief that it need only cite to any number of excuses for its failure to adequately meet the requirements of NEPA. These excuses for its failing to rely on data or analysis include: the Corps' long-held beliefs, the Corps' experience (national and regional), consultation with the National Marine Fisheries Service (NMFS) and/or the U.S. Fish and Wildlife Service (USF&WS), previous documents that fail to address issues, studies that have not yet been concluded, vague and misleading references to casual pseudo-scientific processes such as that conducted by the Sustainable Ecosystems Institute (SEI), and conjecture. In other words, the Corps believes that it can cite to a black box in which it has drawn a conclusion and the mere existence of this box will satisfy the demands of NEPA and other statutory requirements. We disagree.

Accordingly, we continue to believe that the NEPA analysis is inadequate as it relies on an unclear and as yet established set of standards, principles, objectives, and measurements that constitute an alleged adaptive management scheme, which relies on a monitoring scheme that has yet to be established. This type of black box into which the public is precluded from seeing is not sufficient to constitute compliance with NEPA requirements. Likewise, the promise that some future implementation plan for adaptive management will be posted on the Corps' website is not consistent with NEPA requirements.

1. The Corps Has Failed to Evaluate Cumulative Effects as Required by NEPA

The Corps states its belief that its existing discussion of the status of the environment is sufficient to constitute an analysis of the cumulative impacts of all past, present, and reasonably foreseeable future actions and the overall impact that can be expected if the individual impacts are allowed to accumulate. We disagree. Merely outlining some habitat losses, for example, is not the equivalent of an analysis of the cumulative impact of those losses, in addition to pollution, flow manipulation, and other anthropogenic harms to the river system. For example, such discussions do not evaluate the existing

effects on the

status of such species as salmonids, white sturgeon and green sturgeon; it does not address the incremental additional risks those species can or cannot tolerate.

II. The Corps Has Failed to Provide Adequate Mitigation for Short and Long-Term Project Impacts

In response to many comments, the Corps reiterates its belief that the proposed co-called restoration actions are not mitigation. We agree that this is the Corps' intent. We disagree that mitigation, beyond the little that is proposed in the FSEIS, is not required. The federal project of constructing and maintaining a deeper river channel have large-scale impacts on the river and coastal environments, on commercial and recreational fishing and shellfishing industries, and on the estuary environment that require mitigation.

III. The Corps Does Not Have Sufficient Scientific Data Upon Which to Base the FSEIS and Arbitrarily Ignores and Rejects the Scientific Analysis of Other Scientists

The Southwest Coastal Erosion Project has concluded: "The volume of dredged material placed at the mouth of the Columbia River is large compared to long-term changes in the tidal-delta complex." http://www.ecy.wa.gov/programs/sea/swces/research/sediment_budget.htm. We believe that this statement means the Corps' activities are a dominant factor in littoral sand transport. The Corps, however, has taken the position that none of its activities, in particular dredging and dredged material disposal, have an effect sufficient to merit a full response or analysis.

1. The Corps Has Insufficient Bathymetry Data, Has Made Inadequate Sediment Evaluations of Side Slope Areas Likely to Erode, & Has Planned Inadequate and Unstated Monitoring

The FSEIS is based on insufficient bathymetric surveys throughout the project area. Such surveys are required to assess habitat and morphological changes in the river. For example, such studies are needed to assess whether there has already been erosion of and/or accretion in shallow water habitats in the estuary and to better understand sediment transport mechanisms. The last full bathymetric survey was done in 1958 and demonstrated that accretion in the estuary is likely the result of high river flows in the period 1945-74, the installation of the jetties, and navigational structures that exclude flow from shallow areas. The lack of one since then demonstrates the Corps' failure to have evaluated the past alterations of the estuary. A complete bathymetric survey run is also needed to evaluate the project's likely impacts to both the physical environment (e.g., to predict distribution of salinity intrusion, temperature) and to living resources such as crab, which are driven upstream by salinity, thereby increasing the possibility of their entrainment. The Corps' plans to conduct bathymetric surveys are inadequate

both in timing and frequency.
The Corps claims that dredging and channel modifications upstream of RM 40 have not "measurably altered the available sand supply or sand transport to the river." Yet no bathymetric difference studies have been performed for this area on which the Corps could rely. Little analysis of bathymetric change has been done outside the channel above RM 48. Therefore there has been no evaluation of dredging and channel modification effects, including identification of changes in the volume of sediment, upstream of RM 48. The Corps identifies a 1961 study by Hickson as estimating 40 mcy of erosion between Bonneville and the estuary, between 1920 and 1960. There is no evidence as to whether this erosion has continued and, if so, where this erosion has taken place. It is not clear whether Hickson evaluated just the channel areas or whether the shallows and dredged material disposal areas were included. Were all the areas examined for evidence of accretion simultaneously? What do historic experiences of erosion and/or accretion in the estuary say about what will happen in the estuary over the 50-year life of the project and beyond? Are shallow areas likely to erode or are they likely to accrete? The Corps has no data upon which to make such critical projections.

Many forms of monitoring are needed. For instance, it is evident from the FSEIS that little is known about sediment transport processes, sediment supply, and other issues. In fact, NMFS initially concluded that there was insufficient information to define impacts and it is clear from the agency's 2002 Biological Opinion that it has no technical expertise in these areas. The proposed monitoring stations and the data they are to collect are both insufficient to remedy these gaps in the future and too late to rectify the inadequacies of the FSEIS. The Corps should already have been regularly assessing changes in sand transport, sediment properties, suspended sediment, ETM properties, salinity, temperature, stratification, etc. Without such baseline information not only does the FSEIS fall short of meeting NEPA requirements but the alleged adaptive management scheme will fail for lack of the critically-important baseline information. Changes cannot be measured unless they are measured against something.

There has been very little sediment core sampling done, particularly in slide slopes that are expected to "adjust." It is not clear how much of the side slope that will erode is clay. Not only does the Corps not know what will erode from predicted adjustments to channel deepening, it does not know how the existing physical environment has already and is currently changing. Ship waves, especially at sites near the navigation channel, can create shore notches which can dramatically impact slope evaluations.

Monitoring to support the proposed so-called adaptive management scheme is unclear. We reiterate our previous comments in this regard and add that the new proposed staged implementation of the Miller-Pillar site suffers from the same flawed analysis. Without having established baseline information, clear and measurable objectives, and monitoring standards, the Corps cannot evaluate whether the previous stages of that project are successful or not.

Certainly the public cannot determine from the FSEIS what are supposed to constitute "successful results" and whether the Corps will be able to determine success from failure as it implements this uncertain scheme.

2. The Corps Has Failed to Evaluate Sediment Transport Issues, Has Ignored or Arbitrarily Rejected Evidence, and Has Inadequate Data Upon Which to Base an Evaluation of Significant Issues

1. The Corps Lacks Data Resulting in Significant Uncertainties

Inadequate data exist on the sand transport between the MCR and the littoral cell. Sand extraction from the MCR and channel constitutes a net loss of sand from the coast. The degree to which the project will cause further alteration of the balance between the river/MCR and the coast requires data, analysis, and modeling. The Corps states that there is no sand inflow into the area below Bonneville Dam however there is some supply from the Willamette and Cowlitz, etc. that needs to be quantified.

Essential influences on sediment transport have not been evaluated in the FSEIS. The Corps does not include any realistic evaluation of changes in bed stress or stratification that strongly influence sediment transport and would be affected by channel deepening, particularly in the estuary where sediment transport is more complicated than in the river channel. Uncertainties in the sediment budget along with information from SW Washington Coastal Erosion Study indicate the need for better assessment and quantification of sediment transport. There has been no measurement of sediment transport for the Columbia River and the Corps does not propose to begin such monitoring. As a result, the Corps "conclusive findings" in Exhibit J are actually unsupported. The Corps has not collected nor does it intend to collect sufficient data on sediment transport, contrary to NEPA requirements. The Corps does not propose any actions to reduce the uncertainty. Given the number of uncertainties regarding the sediment budget, the Corps needs to formulate a comprehensive program of monitoring, process studies, and numerical modeling of circulation and sediment transport at the level of peer-reviewed science.

2. The Corps Ignores Effects of Sand Deficit

Changes in river flow management have affected sand supply in the estuary. The last complete bathymetric survey, in 1958, showed accretion in the estuary, likely the result of high river flows in 1945-74. Since then, there have been dramatic changes in the sand supply of the estuary, caused by significant changes in river flow management. The rate of sand removal being greater than river sand supply to the estuary means that the sand removed from the estuary is coming from some place. Dredging has exceeded fluvial sand inflow in all but six years since 1910 (four of these six years were prior to the channel being 35 feet deep), making the status quo

unacceptable. There is, therefore, likely to have been a corresponding significant change in the response of the estuary to this change in sand supply. Yet the Corps assumes that nothing has changed. All parties agree that the sand budget is out of balance, that more sand is being removed than is being supplied. Some of this deficit in the estuary will be made up from sediments coming in from the ocean, but eventually, estuarine and fluvial topography must degrade. Without any data, the Corps does not know whether this process has begun, or not.

Existing levels of coastal erosion immediately adjacent to the MCR, inlet and offshore from the Clatsop Plains demonstrates significant changes in sediment transport have taken place and will continue and demonstrates that the littoral system is starved of sediment. This must be from a major change in the sediment budget of the river/coast system. Measurable erosion of coastal beaches is evidence that the estuary is serving as a sink for coastal sediment. The CREDDP studies also found a landward pattern of sediment flow. The Corps' McLaren report states that the flow is not outward, meaning that it found a change in historical patterns. The Corps admits that coastal erosion is occurring but does not attribute this to the estuary functioning as a sink for sediment. Models show that apparent increases in wave heights documented only result in minor adjustments to the system. Therefore, erosion is much more likely to be related to a general decrease in the supply of sediments from the Columbia River to the coast. The Corps has no alternative explanation for why the estuary is full of coastal sand.

Jetty construction initially postponed the effects of beach erosion caused by other human actions. Beach erosion is now highly evident. While changes in the sediment budget have been manifested on coastal shorelines, they will also eventually be manifested elsewhere, namely in the estuary, as it begins to reverse historic accretion. Without regular bathymetric surveys of the entire system, not just the channels, the Corps cannot determine areas and patterns of erosion and accretion.

The FSEIS fails to evaluate the ways in which the project will affect the sand budget. Sand discharge of the river to the coast has been reduced due to flow regulation, irrigation, and climate change. This has the effect of increasing the negative influence of dredging on the sand budget over the last 30 years. The net extraction of sediments in the estuary caused by flow regulation and upstream dredging is increasing space in the estuary to accommodate even greater amounts of coastal sand. Likewise, shelf building processes will be affected by dredging/disposal. Shelf building processes depend upon sand export to the shelf. This is no longer taking place as the sand is eroding from the coast into the estuary channel. The shelf is important as a source of sediment to coastal beaches.

Sandy beaches will not be the only areas to erode; the estuary is likely to erode too. Since the Corps takes the position that 1) dredging is not related to sand supply but rather to re-distribution of sediments, and 2) that channel deepening removal will eventually lead to less maintenance

dredging, one has to conclude dredging will eventually lead to erosion of shallow water areas within the estuary. There is a deficit in the estuarine sand budget and this will cause degradation over time. In fact, the Corps uses this degradation to justify its low dredging estimates.

The Corps argues that there is a lot of sand available in the system. It does not take into account that sediment that is available for transport is finite, especially considering the dams and flow regulation. The bulk of sediments in the system are held in storage. In addition, sediments available for transport are those very sediments that are being dredged. The proposed major dump sites will make situation worse. The Lois Mott and Miller-Pillar so-called "restoration" projects, in conjunction with the Deep Water Site, will not lead to overall improvement because they all will remove sediment from the active transport system. Therefore, the use of these sites reduces the fluvial supply of sand to the lower estuary. Second, these projects will take littoral sand out of the system, making room for more littoral sand to move into the estuary. Neither of these significant issues is addressed by the Corps.

In its Exhibit J, the Corps concludes past dredging and channel modifications "have not yet measurably altered sand supply or sand transport in the river or estuary." Yet tables in that report demonstrate dredging has played a major role in the sediment budget for most of a century. In addition, net removal of sand from the system is a practice initiated only within the last 20 years and the influence of dredging has increased over the last 30 years due to reduced sand discharge caused by other influences. Over a 50-year period sand disposed in upland sites would be approximately 1.5 Mm^3/yr. During 1935-58 river sand supply is estimated to have been 2.6Mm^3/yr, suggesting that at that time upland disposal was less than supply. The FSEIS also concludes that dredging will not reduce sand supply. The Corps states that the project "will not reduce the abundant sand supply available in the riverbed within the project area." Yet it claims total sand transport is 0.4-1.0 mcy/yr and proposes to remove 70 mcy within the next 20 years, a rate of 3.5 mcy/yr. Therefore it would remove 3.5-8.75 times the amount of sand transported annually. This is a net extraction of sand.

Finally, the Corps concludes that dredging will not affect MCR/littoral cell. The Corps claims deepening "will not alter the sand transport through the MCR nor the sediment budget of the littoral cell." Yet, Allan and Beaulieu (2002) conclude that "any extraction of sand adjacent to the river mouth and navigation channel does constitute a net loss of sand....[which] continues to deplete sand from an already starved coastal system." While the Corps claims that global climate variations that reduced stream flows were the primary cause of sand transport decline between 1800s and 1972, Allan and Beaulieu state: "This statement completely ignores the role of major dam construction and the impact impoundment has had on sediment supply in the Columbia River....Furthermore, the above statement ignores the role of dredging, which has removed substantial quantities of sediment from the system. Indeed, there appears to be no comprehensive assessment of the effects of dredging on sediment supply."

The Corps argues that since the present river system does not discharge sand to the coast, channel deepening is not a problem because it does not alter the status quo. This ignores the fact that the status quo is not acceptable. In addition, the project is a substantial change in the status quo; it is not merely a 3 foot deepening but a substantial change in sediment management practices that will remove more sand from the system than before.

3. The Corps's Analysis of Data is Defective

By averaging flow/sediment data, the Corps ignores the effect of the Pacific Decadal Oscillation (PDO) on its estimates of dredging volumes. The wet period of the PDO generally lasts longer than the dry period. We are entering a wet period, yet the Corps has based its projections of sediment volumes on the averages from a particularly dry period (1980-95). After correcting for flows (the ratio of high to low flows is 1.65), the more likely volumes would be 170 percent of what the Corps is projecting. In addition, the Corps has historically underestimated dredging volumes: for example, the last 20 years of sediment volumes have been 140 percent of the predicted volume. While eventually dredging volumes will be reduced, in the interim, the system will likely respond by eroding where it has historically accreted, with the result that dredging volumes will be maintained and habitat will be eroded, both issues the FSEIS fails to address.

The Corps averages data that should be evaluated by climate conditions. The Corps needs to make its sediment volume estimates based on multiple climate scenarios. Instead, it has averaged out the record of river flows, regardless of cause, and sand supply thereby creating the impression that there is no link between them and dredging. In fact, when periods of high flow are evaluated separately from periods of low flow, the data demonstrate that the Corps has seriously underestimated the volumes. This includes, but is not limited to, the role of the PDO.

The Corps omits sand removal histories. Past removal of sand to land has been underestimated. In addition to the MCR and main navigation channel projects, there were a number of navigation projects in the estuary that required dredging: Skipanon River channel (responsible for the large spits at the mouth of the Skipanon), Baker Bay channel (from E. of Upper Sand Island to the vicinity of the Coast Guard base, used for rock barges), Ilwaco, and Chinook. In addition, Mott and Lois Islands were created, among many others, the Tongue Pt Seaplane base area filled, and downtown Astoria filled around 1921 after fire destroyed the original downtown (built on pilings). There are also major fills around Puget Island and Tenasillahe Island. Other fills are located near the Port of Astoria and west of Tongue Pt (inside the railroad tracks). Early in the 20th Century, Longview was also filled. We do not currently know to what extent these urban fills were channel maintenance projects, but they certainly used sand. Finally, the numerous dikes in the system contain sand that has been permanently removed from the system.

4. Fundamental Flaws Exist in the Corps' Analysis

Sand movement processes include suspension in high flows. In the FSEIS, the Corps takes the position that all sediment is transported as bedload, disregarding the movement of sediment transported in suspension in high flows that is used by bedload transport to create bedforms. There was a long-term accumulation of sand in the estuary between 1868-1958 but there is no data on what has happened since.

One obvious flaw is the Corps' insistence that the MCR and the river channel can be analyzed separately. It is obvious to any lay person that the river does not operate as if there were a magical wall at rivermile 3. Moreover, the Corps seeks to meet NEPA requirements by citing to ESA consultation documents, such as the 1999 Operation and Maintenance Biological Opinion. This Bi Op purports to include the MCR along with the river channel although it contains no analysis whatsoever on the MCR.

5. The Corps is Inconsistent in its Analysis

The Corps states there will be no effect on available sand supply because there is unlimited sand supply. Yet the Corps states that "alteration of the channel bathymetry, resulting from dredging and flowlane disposal, has the potential to change the relative balance between the freshwater velocities and ocean tidal forces." The Corps also states that "tidal forces have established a pattern of sediment transport within the Columbia River Estuary, which is responsible for the fact that river sediments in transport close to the bottom are inhibited in their passage to the ocean. These forces also introduce ocean sediments into the estuary throughout the length of the salinity intrusion. As a consequence, bottom sediments from the ocean as well as from the upland areas are gradually filling in the estuary."

Likewise, the Corps is inconsistent on sediment discharge. The Corps claims there will continue to be a "small net discharge of sand from the estuary to the MCR." This contradicts its own statements that dams have eliminated sand supply to the coast. Moreover, McLaren and Hill (2001) concluded "the results of the STA clearly show that the nearshore shelves and beaches on both sides of the Columbia river mouth are sediment starved."

Either the Corps is underestimating supply or it is mining the system for sand, or both. The Corps assumes that there is no new sediment entering the system and that dredging is merely removing sediments that are rearranging themselves within the system (re-handling). In fact, it states that the amount of dredge volumes will go down after the channel is deepened. This means that the sediments to be removed by dredging will come from someplace within the estuary. In the near term, this amount is likely to keep dredging volumes high (i.e., the Corps has underestimated volumes) because the estuary has a lot of stored sand to give back and

because dredging will encourage more littoral sand inflow. In the long term, since erosion cannot occur where the water in the estuary is bounded by dikes, the source of these sediments must eventually be the shallow water areas (which will erode salmon habitat).
The Corps states that maintenance dredging will be lowered due to removal of sand from the system that requires re-handling. It also says that there will be no change in the sand budget. The FSEIS does not explain this contradiction.

6. The Corps Ignores Costs of Coastal Erosion

The Corps has failed to calculate the costs associated with coastal erosion caused by the maintaining the baseline projects. Washington Department of Fish and Wildlife estimates $100 million dollars have been spent by the federal government in the last 10 years to control erosion and mitigate damages to the jetty system and public infrastructure of Grays Harbor and Pacific Counties, "all caused by starvation of sediment as identified in the coastal erosion study." In addition, the project is likely affecting its own integrity: MCR jetties appear to be destabilized by sand removal from the estuary.

7. The Corps Failures to Evaluate Sand Budgets in Estuary Sub Areas

Pile dike fields, which are intended to trap some sand and keep the rest moving, along with the jetties and the island fills (e.g., Rice Island) have diverted both flow and wave energy from shallow water areas (Grays, Baker, Cathlamet Bays) thereby increasing sediment accumulation. Grays, Baker, and Cathlamet Bays were historically much deeper than they are now. This shoaling has not been evaluated for its effect on salmon, other aquatic life, and the estuarine ecosystem.

3. The Corps Has Failed to Fully Evaluate the Historic and Projected Changes in Salinity

The Corps' salinity report is preliminary and cannot be relied upon. The salinity report by Antonio Baptista concluded that his model did not provide evidence that would challenge the conclusion that the impact of deepening on salinity intrusion would be small. However, he also concluded that the results with regard to both salinity intrusion and impact on estuarine habitat opportunity could be used to "guide management decisions...only if model uncertainty is further reduced." His report both admits and omits some limitations of the modeling exercise. It was not systematically calibrated, it does not discuss key aspects of the modeling process related to vertical and horizontal mixing, it does not confirm model results through data analysis, and it is premature to use an unverified model to make conclusions on habitat. In fact, the Corps' salinity report ignores stratification and mixing. There are substantial consequences related to stratification which affect vertical mixing. While stratification and mixing are the hardest to get

right in a model, they are therefore the strongest tests of model correctness.

The Corps' salinity report also uses incorrect depths. It is based on analyzing the effects of an additional three feet of channel depth rather than the actual depth of the increased dredging. Salinity intrusion is very strongly dependent upon maximum channel depth. In addition, the salinity evaluation only addresses the effects of an additional three feet; if one considers the total cumulative effect of dredging on salinity of maintaining 40 or 43 feet, the changes in salinity intrusion are substantial. Likewise, considering the change from 20 to 55 feet in the MCR, along with the channel, changes the analysis. A cumulative analysis of channel effects on salinity intrusion is needed, because changes have been so large, yet the Corps has failed to do so.

4. The Corps Fails to Fully Evaluate Aquatic Life Effects

There is little or no information on use of estuary by wild juvenile salmon upon which the FSEIS can be based. The Corps has not ensured that it obtained the necessary information for the FSEIS, resulting in an information base that concerns larger hatchery juveniles. The salinity intrusion length and mixing need to be evaluated for their biological effect on the ecosystem and aquatic life, including but not limited to salmonids. Likewise, the FSEIS' references to Green sturgeon are inadequate as they fail to take into account the status of the species, and build upon the continuing inadequacy of data and analysis related to the White sturgeon. Lack of data and analysis, described above, on the physical status of the estuary (e.g., changes in sedimentation, flow, and salinity patterns) precludes the Corps from evaluating the baseline conditions faced by salmonids and other species -- such as the negative effects of temperature -- as well as the effect of the project. The Corps' focus on channel conditions, and refusal to acknowledge that the project will have any impacts in the estuary whatsoever, results in its failure to evaluate the baseline and with-project conditions in salmonid habitat. The Corps relies on its flawed conclusions that the project will cause minor effects without fully analyzing whether various species can withstand such minor effects given their precarious status and the degraded state of their habitat.

5. Cumulative Effects

The cumulative effects of human actions have had an effect on the physical and biological status of the river, estuary, and coastal areas affected by the Columbia River. The cumulative effect of pile dikes, flood-control dikes, deepening, jetties, dams, MCR, and spoil disposal have had a significant effect on sediment transport, flow velocity, salinity intrusion, ETM and ecosystem function, and juvenile salmonids. Additional deepening and maintenance dredging will exacerbate the effects of these past and on-going activities. Many scientists have concluded as much and/or have demonstrated that the Corps has gathered insufficient data and analysis upon which to conclude otherwise. Yet, contrary to NEPA, the Corps dismissed these scientific

findings without adequate explanation.

For example, upstream dams have an effect on the sediment budget and transport. The Corps has indicated that dams have effectively eliminated sand supply to the coast but the FSEIS does not evaluate the impact of this anthropogenic change on the river, ecosystem, and aquatic life. Another example is the 1983 MCR deepening EIS that projected salinity increases of 10 pp thousand. The Corps has not evaluated whether its projections were accurate and have not analyzed what effect actual changes had on the variety of organisms in the estuary, including those that make up the ETM. The FSEIS has not evaluated the changes in salinity that have occurred to date from a variety of Corps projects.

6. ETM Shift & Organic Content of Flows

The FSEIS does not evaluate the estimated one-mile upstream shift of the ETM for its potential effect on salmon and other organisms, such as sturgeon. In addition, the ETM could increase pollutant retention due to changes in stratification. Bed stress and suspended sediment concentrations have not been evaluated. Also, not only does the Corps not know what the salinity changes will be, it does not know the effect of an upstream shift in salinity.

The FSEIS does not include any evaluation or consideration to the quality and quantity of organic matter in the freshet versus that present in today's highly managed flows. In theory, a change in sediment input would include a change in fines, making levels of organic matter related to flow. High flows increase the amount of iron upwelling offshore because of previous deposits on the shelf.

IV. Deep Water Site

The assessment of the Deep Water Site lacks sufficient detail to adequately determine the future impacts of dumping dredged sediments at that location. The Corps' current data consists of side-cast sonar studies and insufficient benthic species population surveys. The most recent side-cast sonar studies were restricted to analyses of the physical and chemical *sediment* compatibility of the dredged materials to the naturally-occurring sediments. This data is insufficient to fully assess the impacts on the aquatic habitat at that site. The Ocean Dumping Act's section 102 regulatory guidelines governing site baseline surveys require the collection of sufficient baseline data to determine the "physical, chemical, geological, and biological structure of the proposed" site. 40 C.F.R. §228.13. The Corps is required to conduct sufficient bottom sampling to determine sediment composition and structure and to determine the nature and numbers of benthic biota. 40 C.F.R. §228.13(e)(1). Benthic biota sampling requires both "quantitative and qualitative evaluation of benthic communities including macroinfauna and macroepifuana, meiobenthos, and microbenthos, and should include an

appraisal, based on existing information, of the sensitivity of indigenous species to the waste proposed to be discharged. 40 C.F.R. §228.13(e)(1). Additionally, the "[o]rganisms, shall be sorted, and identified to taxonomic levels necessary to identify dominant organisms, sensitive or indicator organisms, and organism diversity." The detailed benthic infauna data provided by the Corps in the FSEIS is insufficient to meet the required criteria established under the regulations. Additionally, the scope of the proposed project -- including rate, amount, and timing of disposal -- has been defined with such vague parameters that the studies so far completed are meaningless.

The Corps' data and assessment of the impact of dumping larger grained sediments on benthic species at the Deep Water Site is insufficient under the regulatory guidelines. There is agreement among the Corps, State agencies, or stakeholders that crabs covered by disposed sediments are unable to dig out of the sediments and will be expected to die. The degree of destruction of crab and other benthic habitat remains unknown and insufficiently investigated. The Corps originally concluded that the impact was thoroughly studied based on the pilot crab burial study, "*Effects of Sand Accumulation of Juvenile Flatfish and Soft-shelled Dungeness Crab."* When the Oregon Department of Fish and Wildlife (ODFW) characterized the Corps' conclusion as "blatantly false," the Corps responded that its conclusion was additionally based on the "Federal Government's national experience with other bottom feeding species (e.g. lobster, blue crab)." (S-20) The details, sources, and location of this "national experience" data remains unknown and appear speculative at best. Clearly, this conclusion is unsupported by the biological baseline studies and is insufficient to meet federal requirements for both site designation and NEPA. This proposal specifically requires additional baseline data, as well as additional testing and analysis of that data, for the benthic infauna and habitat for this site. Dungeness crabs are an essential part of the food chain in the areas surrounding the ocean disposal sites. Continual degradation of crab habitat will have further negative impacts on other species in the region. The Corps is incapable of predicting measurable effects of reduced aquatic species habitat because inadequate data have been compiled.

Furthermore, the Corps has failed to assess the full impact of the Deep Water Site, as well as the cumulative effects of all the ocean sites. The Corps' statement that the Deep Water Site will have minimal impact is conclusory and lacks adequate support, particularly since the Corps fails to provide detailed information on the amount, rate, and timing of disposal. The Corps vaguely proposes "avoidance and minimization" as the only parameters on its use of the deep water site. The regulations require an analysis of the types and quantities of waste proposed for site disposal, including the "existence and effects of current and previous discharges and dumping in the area (including cumulative effects)." 40 C.F.R. § 228.6(a)(4) and (7).

The Corps concluded, without any data on rate, amount, or timing of material disposal, that

the destruction of benthic species will be insignificant because benthic species, particularly crabs, are widely distributed along the coastal areas beyond the dumping sites. The Corps' conclusions are not based on any estimated dumping rate, quantity, or time estimates or the cumulative effects of other dumping sites and overall degradation on the benthic species and habitat resulting from those sites. The Corps has failed to provide data clarifying the range and numbers of species in the site and in the surrounding areas. The Corps' conclusory statements lack supporting data and are further evidence the lack of research that the Corps has completed in properly assessing impact. The regulatory authority specifically requires that dredged materials must be limited to prevent long-term damage to the environment or to amenities. Without determining and analyzing the proposed amount of dredged materials for the sites, a reasonably reliable evaluation of the complete impact on marine ecosystem cannot be completed. Clearly, these speculative and conclusory statements make it impossible to evaluate whether the impact will be persistent, permanent, or otherwise unacceptable. 40 C.F.R. §227.4. Ironically, the Corps acknowledged that additional burial tests are needed to determine the real extent of the impact of dumping on the benthic species, and it agreed that further testing of the impact of burial will occur "this year if funds are available." The Corps disregarded as insignificant the need for further baseline data because, as it claimed, use of the Deep Water Site is not expected for twenty years. However, the Corps failed to assess the cumulative impact and effects of the segmented MCR proposal for dumping in the Deep Water Site. The Corps presently seeks permanent designation of the Deep Water Site for immediate disposal of MCR dredge materials as needed. Additionally, the Corps has stated that if other disposal sites are not approved, the Corps will consider dumping the channel dredged materials in the permanent §102 designated ocean sites. This aspect of the FSEIS proposal presumably would include the Deep Water Site since it is not specifically excluded by the Corps. The Corps has improperly segmented the use of the Deep Water Site for the MCR project from the channel deepening project; yet, the Corps leaves open the option to dump dredged materials, at its discretion, from either the MCR project or the channel deepening project.

Furthermore, in gathering and assessing baseline data, the Corps has failed to integrate any State, local, and stakeholder contributions to its data and assessment. As the record shows, the Corps completely disregarded the concerns and contributions offered by the Ocean Disposal Task Force, which is composed of the State agencies and stakeholders and which was formed to facilitate cooperative planning, management, and monitoring of ocean disposal. In response to complaints and without any explanation to the public or the Task Force members, the Corps simply states that it is re-evaluating the Task Force. The Corps has thereby blocked any additional input or analysis of baseline data. Yet, the Corps has acknowledged the lack of baseline data and the speculative nature of the benthic data collected for the ocean sites. In its most recent response to ODFW's concerns, summarized in S-18: the Corps has stated that "the biological information presently being gathered, along with the previous biological information… is expected to establish an adequate baseline for monitoring and management of

the ocean disposal sites selected to be proposed for designation." The Corps devaluates the significance of monitoring and management criteria and baseline data for this designation proposal; the Corps states that there is no need to presently evaluate that data because sufficient minimum data has been provided to meet the regulatory and statutory requirements. The Corps similarly dismisses the need for any mitigation strategy because, as it claims, "this small area of the ocean is not likely to translate into measurable effects." The Corps has merely suggested that it will continue collecting data in the future. The Corps' past record is replete with vague declarations of the need for future studies of benthic species; however, little data has been accumulated. Additionally, the Corps diminishes the need for immediate deep water site management, monitoring, or mitigation because, as the Corps claims, the Deep Water Site will only be used for channel deepening dredge materials twenty years in the future. However, since this proposal is connected to past and interim ocean dredging actions, monitoring and management baseline data for the existing ocean dumping sites is necessary to determine and evaluate the cumulative effects of disposing of dredged materials in the Deep Water Site. In addition, even if the Corps speculative use of the Deep Water Site is not for another 20 years, that fact does not negate meeting legal requirements now.

Pursuant to 40 C.F.R. §228.6, the Corps must consider the full panoply of criteria in its environmental assessment and EIS of the impact of dumping materials at its proposed ocean site. The criteria include:

1) Geographical position, depth of water, bottom topography and distance from coast;
2) Location in relation to breading, spawning, nursery, feeding, or passage areas of living resources in adult or juvenile phases;
3) Location in relation to beaches or other amenity areas;
4) Types and quantities of wastes proposed to be disposed of, and proposed methods of release, including methods of packing the waste, if any;
5) Feasibility of surveillance and monitoring;
6) Dispersal, horizontal transport and vertical mixing characteristics of the area, including prevailing current direction and velocity, if any;
7) Existence and effects of current and previous discharges and dumping in the area (including cumulative effects);
8) Interference with shipping, fishing, recreational, mineral extraction, desalination, fish and shellfish culture, areas of special scientific importance and other legitimate uses of the ocean;
9) The existing water quality and ecology of the site as determined by available data or by trend assessment or baseline surveys;
10) Potentiality for the development or recruitment of nuisance species in the disposal site; and

11) Existence at or in close proximity to the site of any significant natural or cultural features of historical importance.

An evaluation of these criteria are required for the cumulative effects of use of the site for disposal from the MCR project and the channel deepening project; the cumulative effects of the sites in the area; and the cumulative effects of the past and current use of the sites in the area. The Corps has effectively segmented its analysis of the Deep Water Site from other cumulative effects of disposal site use. The Corps' vague statements about the Deep Water Site effectively leave all decisions and determinations about the site to its future discretion without any real consideration of the impact to species and habitat in the assessment before the Deep Water Site is permanently designated.

The regulations also prohibit dumping waste in a manner that presents an unacceptable danger to the shorelines and the nearby beaches. 40 C.F.R. §227.10. One criteria for assessing the impact of ocean dumping includes potential for affecting recreational use and values of ocean waters, inshore waters, beaches, or shorelines. Additionally, the need for dumping the dredged materials in the Deep Water Site must be assessed relative to the irreversible and irretrievable consequences resulting from that disposal. 40 C.F.R. §227.15. In light of these criteria, consequences, and costs, the feasibility of alternatives must be evaluated. 40 C.F.R. §227.15. The regulations specifically suggest preferred alternatives including using the materials as "landfill" or by "spreading the material over the ground." 40 C.F.R. §227.15. The Corps has not adequately addressed either the long-term or cumulative effects that the dredging and disposal projects are having on the coastal erosion problems. The Corps recognizes the beneficial use and need for beach fill along the coasts. The sediment starvation along those beaches and coastlines is a direct result of the dredge and disposal projects by the Corps in the Columbia River channel. Washington State Department of Fish and Wildlife has specifically requested that the Corps consider the continuing and unacceptable danger to the shorelines and beaches. However, the Corps merely acknowledges the need for future analysis. The Corps has not given any immediate consideration of the real costs resulting from this degradation. The cumulative impact of disposing of sand in the deep water site will result in its permanent waste because it will be irretrievably lost. As stated by the Washington State Department of Fish and Wildlife, the sand should not be wasted in the deep water because it exacerbates the costs, already "nearly 100 million dollars," from erosion, habitat loss, and degraded coastal infrastructure. These costs, which continue to place harmful and unnecessary stress on coastal fish, wildlife, and human populations, are due to the on-going sediment starvation caused by the Corps' dredge and disposal methods. Ocean dumping is simply prohibited unless the Corps demonstrates that the absence of "practicable alternative locations and methods of disposal or recycling" that have less adverse impact or and less potential risk to the environment. 40 C.F.R. §227.16. In evaluating the practicable alternatives, the EPA and the Corps must take into account all "environmental benefits derived from" the alternatives, as

well as the true costs of coastal degradation resulting from ocean dumping.

Conclusion

As it is our belief that the Corps has not adequately and satisfactorily responded to many of our September 15, 2002 comments submitted on the Draft Supplemental EIS, we hereby incorporate those by reference. Likewise, we incorporate by reference those portions of comments submitted by Washington Department of Ecology, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, and Oregon Department of Geology and Minerals (DOGAMI) on the DSEIS that pertain to issues regarding sand transport, sedimentation, coastal erosion, aquatic life, and the Deep Water Site. We disagree with the Corps' belief, stated in the FSEIS response to comments, that its citations to the 2001 SEI process and 2002 Biological Opinions issued by the National Marine Fisheries and U.S. Fish and Wildlife Services are sufficient evidence of compliance with the requirements of NEPA. Neither of those processes developed new data, reliable modeling results, or the type of intensive scientific analysis required for this project. In particular, they consist primarily of the opinions and, in some cases, the mere feelings, of the participants. In addition, evaluations done in those contexts are themselves highly flawed because they failed to consider the baseline effects of various human activities in the action area that have affected such physical and biological attributes as temperature, toxics, sedimentation, salinity, and the ETM. The Corps cannot rely on the SEI panel and Services when those entities fundamentally misunderstand and misapply federal law. Moreover, it is particularly ironic that the Corps seeks to rely on these other agencies and processes yet then declines to, as it states repeatedly in its response to public comments, "respond to comments that are actually directed to the Biological Opinions prepared" by other agencies. Finally, we disagree that the Corps has adequately evaluated the effects of channel maintenance in the 1998 Dredged Material Management Study and Supplemental Environmental Impact Statement (DMMS). The DMMS is as devoid of data, analysis, and substance as the FSEIS for the channel deepening project, if not more so.

Sincerely,

Nina Bell
Executive Director